

**OPENING STATEMENT OF  
THE HONORABLE VERNON J. EHLERS  
RANKING MEMBER  
SUBCOMMITTEE ON RESEARCH AND SCIENCE EDUCATION  
COMMITTEE ON SCIENCE AND TECHNOLOGY  
U.S. HOUSE OF REPRESENTATIVES**  
“Improving the Laboratory Experience for America’s High School Students”  
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2:00 p.m. to 4:00 p.m.  
2318 Rayburn House Office Building

Laboratory experiences are a significant part of the greater issue of improving STEM education in our nation. U.S. science literacy is weak at the K-12 levels, and our universities are burdened with a tremendous amount of remedial work in these areas. I am constantly on a mission to find ways that we can strengthen our system of education at all levels to incorporate support for STEM teachers and students. I am very pleased that my colleague, Representative Hinojosa, has introduced this bill to improve high school laboratory science, particularly for those in highest need. I expect that the witnesses’ reflections on laboratory science and the proposed legislation will be an invaluable part of the Committee process.

There is clearly a need to improve upon high school laboratory experiences. One of the conclusions of the National Research Council’s Report on lab science was that educators and researchers do not agree on how to define high school lab science. This is a fundamental and necessary place to start. In fact, the NRC Report found that there is such limited data on typical laboratory experiences that it is difficult to draw any conclusions about their effect on student learning. The experts on the NRC panel scrutinized the strengths of integrated lab experiences, and discovered that a lab is only

helpful when it is fully integrated into the learning process. Clearly, there is a dearth of research in this area, and students across the nation could benefit from a study on the best way to establish a successful laboratory.

Nobel Laureate Carl Wieman has been working in this area for years now – in fact, he has recently decided to work full time on improving science education. During his tenure at the University of Colorado, he developed a Physics Education Technology project with simulations for teaching and learning physics and has made them freely available from a website. These simulations emphasize the connections between real-life phenomena and the underlying science, and drew heavily on prior research findings. Though Dr. Wieman’s project is far from a “traditional” – or even “hands-on” type of laboratory, the undergraduate physics students who used his simulations showed an increased mastery of concepts. In one of his research papers Dr. Wieman concluded that “Many physicists find it quite mysterious and somewhat disturbing that carefully developed simulations are more educationally effective than real hardware<sup>1</sup>.” As the National Research Council High School Lab Report also determined, I think there is a lot more work necessary to determine what an effective laboratory looks like.

I look forward to the discussion about developing integrated laboratories, and to learn from our witnesses. All of them have tremendous experience “in the trenches”, and I welcome them here today.

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<sup>1</sup> Physics Today, November 2005, pp. 36-40